

Claims

The invention claimed is:

1. A radial-hinge mechanism, comprising:

an even number of at least eight elongated spokes substantially equal in length and interwoven around and substantially tangent to a generally circular inner-aperture, wherein opposite ends of each of the spokes are connected to the ends of different ones of the spokes providing a fully interconnected assembly with a variable propensity for one of pivoting open and closed around a substantially circular hinge-core, and wherein each connected pair of the spokes form a protrusion with a full set of the protrusions defining an outer circumference of peripheral points with alternate ones of the peripheral points lying in one of two parallel planes.

2. The mechanism of claim 1, wherein the assembly is based upon a geometric design derived from a circle of peripheral points connected by chords into a regular radial pattern, with the pattern further reconciled into a radially-symmetrical criss-crossing of the spokes.

3. The mechanism of claim 2, wherein the spokes are at least one of rigid, semi-rigid and elastic.

4. The mechanism of claim 3, wherein each of the spokes are made of at least one of plastic, fiberglass, wood and metal.

5. The mechanism of claim 4, wherein the connections are achieved by at least one of connectors, fusion, welding and gluing.

6. The mechanism of claim 5, wherein the connections are substantially secured by spoke-end-connectors to connect one spoke-end to another spoke-end.

7. The mechanism of claim 6, wherein the spoke-end-connectors are single-port receptacles designed to hold together ends of two of the spokes.
8. The mechanism of claim 7, wherein the spoke-ends are each angle-cut to meet substantially flush at the connections.
9. The mechanism of claim 6, wherein the spoke-end-connectors are dual-port receptacles each designed to hold the ends of two spokes.
10. The mechanism of claim 9, wherein the dual-port receptacles each include a cap and a dual-holed grommet-insert sized to accommodate the spoke-ends.
11. The mechanism of claim 10, wherein the spokes are substantially straight, cylindrical and cross-sectionally consistent.
12. The mechanism of claim 11, wherein the spokes further include channels formed around spoke circumferences near ends of the spokes, and wherein the channels interface with the grommet holes and are capable of turning within the holes.
13. The mechanism of claim 6, wherein the spoke-end-connectors are variably joined with similar two-point end-connectors to provide a four-point inter-hinge-connector for stacking two or more of the radial-hinge mechanisms.
14. The mechanism of claim 13, wherein the spoke-end-connectors are joined with a line-hinge to provide an equilateral and stabilized interconnection between two or more of the radial-hinge mechanisms.
15. The mechanism of claim 1, wherein the elongated spokes are of variable lengths that do not substantially alter the radial-hinge action of the mechanism.

16. The mechanism of claim 1, wherein the spokes include interconnections made at locations along a length of the spokes.
17. The mechanism of claim 1, wherein the mechanism includes two singular forms with each of the forms fully inter-connected with one-half of the total peripheral points, and wherein each one-half of the peripheral points are in an opposite but substantially parallel plane.
18. The mechanism of claim 17, wherein the forms are disk-shaped and substantially similar to each other.
19. The mechanism of claim 17, wherein one or both of the forms further include depressed channels to act as slide tracks for the peripheral points to run in to direct and regulate radial-movement during opening and closing of the mechanism.
20. The mechanism of claim 1, wherein the connections are fixed with a double c-clip device with a point-hinge swivel.
21. The mechanism of claim 1, wherein the inner-aperture is transversely occupied by a shaft and the mechanism interfaces with the shaft to one of clutch, brake and grip the shaft.
22. The mechanism of claim 1, wherein one or more of the protrusions are formed as bends in one of the spokes.
23. The mechanism of claim 1, wherein the assembly includes a cover that one of fully and partially covers the spokes to create a radial-hinge-based chamber.
24. The mechanism of claim 23, wherein the cover opens and closes with a bellows action while acting in tandem with movements of the mechanism.

25. The mechanism of claim 23, wherein the cover accommodates two or more stacked ones of the radial-hinge mechanisms.

26. The mechanism of claim 25, wherein the cover opens and closes with a bellows action while acting synchronously with the movements of stacked ones of the radial-hinge mechanisms.

27. The mechanism of claim 1, wherein the assembly further includes direct attachments of at least one of a blade and a prop for achieving at least one of fluid movement, cutting and drilling.

28. The mechanism of claim 1, wherein the hinge-core further includes a constraining band to modify movement of the mechanism.

29. The mechanism of claim 28, wherein the band is elastic.

30. The mechanism of claim 28, wherein the band releases at a predetermined threshold of applied force.

31. A radial-hinge mechanism based upon a geometric design derived from a circle of delineations interconnected by chords end-to-end in regular patterns with the delineations also locating initial peripheral points of the mechanism, the mechanism comprising:

one or more elongated members interwoven and interconnected around a substantially circular inner-aperture to provide a resultant assembly with a fully-integrated framework with a variable propensity for pivoting open upon a generally circular hinge-core made up of an even number of at least eight hinge crossmembers; and

one or more interconnections interconnecting the one or more elongated members.

32. The mechanism of claim 31, wherein the fully-integrated framework is defined by a two-dimensional pattern.

33. The mechanism of claim 31, wherein the elongated members are one of rigid, semi-rigid and elastic.

34. The mechanism of claim 33, wherein each of the elongated members is made of at least one of a plastic, a fiberglass, a wood and a metal.

35. The mechanism of claim 34, wherein the interconnections are achieved by at least one of connectors, fusion, welding and gluing.

36. The mechanism of claim 35, wherein the interconnections are two-point interconnections that interconnect ends of two of the elongated members.

37. The mechanism of claim 36, wherein the two-point interconnections are located at peripheral points, and wherein the elongated members are a plurality of spokes of substantially equal length.

38. The mechanism of claim 37, wherein the peripheral points map out two circles, with each of the circles occupying separate spaced parallel planes, and wherein one-half of the peripheral points are in one of the planes and the other one-half of the peripheral points are in the remaining one of the planes.

39. The mechanism of claim 38, wherein the interconnections are confirmed with two-point spoke-end connectors.

40. The mechanism of claim 39, wherein the spoke-end-connectors are dual-port receptacles designed to receive and retain ends of two of the spokes.

41. The mechanism of claim 40, wherein the dual-port receptacles are comprised of caps with dual-holed grommet-inserts.
42. The mechanism of claim 41, wherein the spokes are substantially straight, cylindrical and have a consistent cross-section.
43. The mechanism of claim 41, wherein the grommet holes have a diameter less than that of the end of the spokes.
44. The mechanism of claim 39, wherein the two-point spoke-end-connectors are each variably joined with other two-point end-connectors to provide a four-point inter-hinge-connector utilized in the stacking of two or more of the radial-hinge mechanisms.
45. The mechanism of claim 44, wherein the spoke-end-connectors are joined with a coil-spring.
46. The mechanism of claim 35, wherein the interconnections interconnect elongated members at more than two points at a time.
47. The mechanism of claim 46, wherein the interconnections are accomplished by two singular forms with each of the forms fully interconnected with one-half of the peripheral points, and wherein each one-half of the peripheral points are in opposite but substantially parallel planes.
48. The mechanism of claim 47, wherein the forms are substantially similar to each other.
49. The mechanism of claim 47, wherein the forms are disk-shaped.

50. The mechanism of claim 47, wherein one or both of the forms further include depressed channels to act as slide tracks for peripheral points to run in to direct and regulate radial-movement during opening and closing of the mechanism.
51. The mechanism of claim 31, wherein the interconnections are made with a double c-clip device with a point-hinge swivel.
52. The mechanism of claim 31, wherein the inner-aperture is transversely occupied by a shaft and the mechanism interfaces with the shaft to one of clutch, brake and grip the shaft.
53. The mechanism of claim 31, wherein the framework is fully or partially enclosed by a cover to create a radial-hinge-based chamber.
54. The mechanism of claim 53, wherein the cover opens and closes with a bellows action while acting in tandem with movements of the mechanism.
55. The mechanism of claim 53, wherein the cover accommodates two or more stacked ones of the radial-hinge mechanisms.
56. The mechanism of claim 55, wherein the cover opens and closes with a bellows action, while acting in tandem with movements of the stacked mechanisms.
57. The mechanism of claim 31, wherein the framework further includes direct attachments of at least one of a blade and a prop for achieving at least one of fluid movement, cutting and drilling.
58. The mechanism of claim 31, wherein the hinge-core further includes a constraining band to one of restrict and enhance movement of the mechanism.

59. The mechanism of claim 58, wherein the band is elastic.
60. The mechanism of claim 58, wherein the band releases at a predetermined threshold of applied force.
61. A radial-hinge mechanism with interwoven elongated members interconnected around a generally circular inner-aperture and providing a monolithic, closed-loop, star-shaped framework with a variable propensity for pivoting open upon its generally circular hinge-core, the mechanism comprising:
- sixteen semi-rigid elongated spokes substantially equal in length and cross-section, interconnected one to another at sixteen peripheral points and based on a pattern with five arcs per chord with a ratio of approximately seventy-five-to-one for the length of the spokes in comparison to a diameter of the cross-section of the spokes; and
 - sixteen two-point spoke-end-connectors to fully interconnect the plurality of spokes of the mechanism.